

maleic anhydride modified EVAs or polyethylenes, or acrylic acid or methacrylic acid copolymers e.g. with ethylene may be used in addition to or in place of various polymers indicated above in intermediate or outer layers to adhere to adjacent layers. Use of such adhesives may be advantageous e.g. when layers containing polymers such as EVOH are to be bonded to ethylene polymer containing layers such as VLDPE.

In The Claims:

Please amend Claims 6, 13, 29, 32, 40, 63, 85-87, 91, 93, 107, 108, 110 and 111 as follows:

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6. (Amended) A polymer film, as defined in claim 1, wherein said third polymer is selected from the group consisting of ethylene vinyl acetate copolymer, ethylene methylacrylate copolymer, ethylene butylacrylate copolymer, and ethylene ethylacrylate copolymer.

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13. (Amended) A film, as defined in Claim 1, wherein said film has a shrinkage value at 80°C of at least 45% in at least one of the machine and transverse directions.

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28. (Amended) A film, as defined in claim 1, wherein said layer comprising a blend has been irradiatively crosslinked.

29. (Amended) A film, as defined in claim 1, wherein said film forms a tube having an inner heat sealing layer comprising said blend.

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32. (Amended) A film, as defined in Claim 26, wherein said film is a tubular multilayer film formed by coextrusion or coating lamination and said tubular film has an inner heat sealing layer comprising said blend.

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40. (Twice Amended) A film, as defined in Claim 27, wherein said film comprises:
a first heat sealing surface layer comprising a polymer selected from the group consisting of: (a) at least 50% by weight of a copolymer of propene and at least one α -olefin selected from the group

consisting of ethylene, butene-1, methylpentene-1, hexene-1, octene-1 and mixtures thereof having a propene content of at least 60 wt. %, and (b) at least 50% by weight of a copolymer of ethylene and at least one α -olefin selected from the group consisting of propylene, butene-1, methylpentene-1, hexene-1, octene-1 and mixtures thereof having a melting point of at least 105°C and a density of at least 0.900 g/cm³;

a second intermediate layer;
a third core layer comprising at least 80% by weight, based on said third layer's weight, of at least one copolymer of vinylidene chloride with from 2 to 20 weight percent, based on said copolymer's weight, of vinyl chloride or methyl acrylate; and
a fourth surface layer;

wherein at least one of said second and said fourth layers comprise a blend of at least three copolymers comprising:

25 to 85 weight percent of a first polymer having a melting point of 55 to 95°C comprising at least one copolymer of ethylene and octene-1;

5 to 35 weight percent of a second polymer having a melting point of 115 to 128°C comprising at least one copolymer of ethylene and at least one α -olefin; and

10 to 50 weight percent of a third polymer having a melting point of 60 to 110°C comprising at least one unmodified or anhydride-modified copolymer of ethylene and a vinyl ester, acrylic acid, methacrylic acid or an alkyl acrylate; wherein said first and second polymers have a combined weight percentage of at least 50 weight percent, said weight percentage being based upon the total weight of said first, second and third polymers; and wherein said film has a shrinkage value at 90°C of at least 45% in at least one of the machine direction or transverse direction, and said film has a maximum ram puncture force of at least 65 Newtons; and said core layer is disposed between said second and said fourth layers.

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63. (Twice Amended) A film, as defined in claim 51 or 52, wherein said film comprises:
a first heat sealing surface layer comprising a polymer selected from the group consisting of: (a) at least 50% by weight of a copolymer of propene and at least one α -olefin selected from the group consisting of ethylene, butene-1, methylpentene-1, hexene-1, octene-1 and mixtures thereof having a propene content of at least 60 wt. %, and (b) at least 50% by weight of a copolymer of ethylene and at least one α -olefin selected from the group consisting of propylene, butene-1, methylpentene-1, hexene-1, octene-1 and mixtures thereof having a melting point of at least 105°C and a density of at least 0.900

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g/cm³;

a second intermediate layer;

a third core layer comprising at least 80% by weight, based on said third layer's weight, of at least one copolymer of vinylidene chloride with from 2 to 20 weight percent, based on said copolymer's weight, of vinyl chloride or methyl acrylate; and

a fourth surface layer;

wherein at least one of said second and said fourth layers comprise said blend of at least three copolymers, and said core layer is disposed between said second and said fourth layers.

85. (Amended) A flexible film, as defined in claim 84, wherein said film comprises:

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a heat sealing surface layer comprising a polymer selected from the group consisting of: (a) at least 50% by weight of a copolymer of propene and at least one α -olefin selected from the group consisting of ethylene, butene-1, methylpentene-1, hexene-1, octene-1 and mixtures thereof having a propene content of at least 60 wt. %, and (b) at least 50% by weight of a copolymer of ethylene and at least one α -olefin selected from the group consisting of propylene, butene-1, methylpentene-1, hexene-1, octene-1 and mixtures thereof having a melting point of at least 105°C and a density of at least 0.900 g/cm³;

an intermediate layer;

a core layer;

an outer protective surface layer;

wherein at least one of said intermediate and said outer protective layers comprise a polymer blend of at least three copolymers comprising:

25 to 85 weight percent of a first polymer having a melting point of from 55 to 95°C comprising at least one copolymer of ethylene and octene-1;

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5 to 35 weight percent of a second polymer having a melting point of from 115 to 128°C comprising at least one copolymer of ethylene and at least one α -olefin; and

10 to 50 weight percent of a third polymer having a melting point of from 60 to 110°C comprising at least one unmodified or anhydride-modified copolymer of ethylene and a vinyl ester or an alkyl acrylate; wherein said first and second polymers have a combined weight percentage of at least 50 weight percent, said weight percentage being based upon the total weight of said first, second and third polymers;

and said core layer is disposed between said intermediate and said outer protective layers.

86. (Amended) A process for making biaxially stretched, heat shrinkable film comprising:
extruding a melt plastified primary tube comprising 25 to 85 weight percent of a first polymer having a melting point of from 55 to 95°C comprising at least one copolymer of ethylene and octene-1;
5 to 35 weight percent of a second polymer having a melting point of from 115 to 128°C comprising at least one copolymer of ethylene and at least one α -olefin; and

10 to 50 weight percent of a third polymer having a melting point of from 60 to 110°C comprising at least one copolymer of ethylene and a vinyl ester or an alkyl acrylate; wherein said first and second polymers have a combined weight percentage of at least 50 weight percent, said weight percentage being based upon the total weight of said first, second and third polymers;

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cooling said primary tube;

reheating said cooled tube to a draw point temperature of from 65 to 88°C;

biaxially stretching said tube to a circumference of at least 2½ times the circumference of said primary tube, and cooling said biaxially stretched tube to form a biaxially stretched, heat shrinkable film.

87. (Amended) A process, as defined in claim 86, wherein said draw point temperature is of from 68 to 79°C.

91. (Twice Amended) A process, as defined in claim 86, wherein a multilayer primary tube is made by coextrusion or coating lamination and said resultant biaxially stretched film comprises:

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a heat sealing surface layer comprising a polymer selected from the group consisting of: (a) at least 50% by weight of a copolymer of propene and at least one α -olefin selected from the group consisting of ethylene, butene-1, methylpentene-1, hexene-1, octene-1 and mixtures thereof having a propene content of at least 60 wt. %, and (b) at least 50% by weight of a copolymer of ethylene and at least one α -olefin selected from the group consisting of propylene, butene-1, methylpentene-1, hexene-1, octene-1 and mixtures thereof having a melting point of at least 105°C and a density of at least 0.900 g/cm³;

an intermediate layer;

a core layer comprising at least 80% by weight, based on said third layer's weight, of at least one copolymer of: EVOH; or vinylidene chloride with from 2 to 20 weight percent, based on said copolymer's weight, of vinyl chloride or methyl acrylate; and

an outer protective surface layer;

wherein at least one of said intermediate and said outer protective layers comprise, a polymer blend of at least three copolymers comprising:

25 to 85 weight percent of a first polymer having a melting point of from 55 to 95°C comprising at least one copolymer of ethylene and octene-1;

5 to 35 weight percent of a second polymer having a melting point of from 115 to 128°C comprising at least one copolymer of ethylene and at least one α -olefin; and

10 to 50 weight percent of a third polymer having a melting point of from 60 to 110°C comprising at least one copolymer of ethylene and a vinyl ester or an alkyl acrylate; wherein said first and second polymers have a combined weight percentage of at least 50 weight percent, said weight percentage being based upon the total weight of said first, second and third polymers, and said core layer is disposed between said intermediate and said outer protective layers, and said film has a maximum ram puncture force of at least 100 Newtons, a hot water puncture resistance of at least 100 seconds at 95°C and a hot water seal strength of at least 200 seconds at 95°C.

93. (Amended) A biaxially stretched, heat shrinkable, multilayer film useful for food processing and packaging having at least four layers comprising:

a first heat sealing surface layer comprising a polymer or blend of polymers selected from the group consisting of: (a) at least 50% by weight of a copolymer of propene and at least one α -olefin selected from the group consisting of ethylene, butene-1, methylpentene-1, hexene-1, octene-1 and mixtures thereof having a propene content of at least 60 wt. %, and (b) at least 50% by weight of a copolymer of ethylene and at least one α -olefin selected from the group consisting of propylene, butene-1, methylpentene-1, hexene-1, octene-1 and mixtures thereof having a melting point of at least 105°C and a density of at least 0.900 g/cm³;

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a second polymeric layer comprising a blend of (a) from 25 to 85 wt. % of a first polymer having a melting point of 55 to 95°C comprising a copolymer of ethylene and octene-1; (b) from 5 to 35 wt. % of a second polymer having a melting point of 115°C to 128°C comprising a copolymer of ethylene and at least one C₄-C₈ α-olefin; and (c) from 10 to 50 wt. % of a third polymer having a vinyl ester melting point of 60 to 110°C comprising a copolymer of ethylene with a vinyl ester, preferably 4 to 18% by weight of said copolymer, acrylic acid, methacrylic acid, or alkyl acrylate, preferably 4 to 30% alkyl acrylate by weight of said copolymer, wherein said first and second copolymers have a combined weight percentage of at least 50 weight percent, said weight percent being based upon the total weight of said first, second and third polymers;

a third layer comprising at least 80% by weight, based on said third layer's weight, of EVOH or at least one copolymer of vinylidene chloride with from 2 to 20 weight percent, based on said copolymer's weight, of vinyl chloride or methyl acrylate; and

a fourth polymeric layer comprising (a) from 10 to 85 wt. % of a first copolymer of ethylene and at least one C₃-C₈ α-olefin, said first copolymer having a melting point of 55 to 98°C, (b) from 5 to 60 wt. % of a second copolymer of ethylene and at least one C₄-C₈ α-olefin, said second copolymer having a melting point of 115°C to 128°C, and (c) from 0 to 50 wt. % of a third copolymer having a melting point of 60 to 110°C of ethylene with a vinyl ester, preferably 4 to 18 wt. % of vinyl ester based on the weight of said third copolymer, acrylic acid, preferably 4 to 30 wt. % of acrylic acid based on the weight of said third copolymer, methacrylic acid, or alkyl acrylate, wherein said first and second copolymers have a combined weight percentage of at least 50 weight percent, said weight percent being based upon the total weight of said layer; and

wherein said film has a shrinkage value at 90°C of at least 40% in at least one of the machine and transverse directions, and said film has a tensile seal strength of at least 400 g/cm at 88°C.

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107. (Amended) A film, as defined in claim 93, wherein said third copolymer of both said second and fourth layers comprises 4 to 18 %, by weight of said copolymer, of a vinyl ester or 4 to 30 wt. % of an alkyl acrylate.

108. (Amended) A film, as defined in claim 93, wherein in said fourth polymeric layer comprises a blend of: (a) from 25 to 85 wt. % of a first polymer having a melting point of 55 to 95°C comprising a copolymer of ethylene and octene-1; (b) from 5 to 35 wt. % of a second polymer having a melting point of 115°C to 128°C comprising a copolymer of ethylene and at least one C₄-C₈ α -olefin; and (c) from 10 to 50 wt. % of a third polymer having a melting point of 60 to 110°C comprising a copolymer of ethylene with a vinyl ester, acrylic acid, methacrylic acid, or alkyl acrylate, wherein said first and second copolymers have a combined weight percentage of at least 50 weight percent, said weight percent being based upon the total weight of said first, second and third polymers.

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110. (Amended) A film, as defined in Claim 93, wherein said copolymer of ethylene and octene-1 is present in an amount of 50 to 85 wt. %.

111. (Amended) A film, as defined in Claim 93, wherein said copolymer of ethylene and octene-1 is present in an amount of 25 to 50 wt. %.